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Dated 17 March 2005

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P01/7700 0.00-0218855.5

## Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

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NEWPORT

The Patent Office

Cardiff Road  
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1. Your reference

RAB.P04706GB

0218855.5

2. Patent application number  
(The Patent Office will fill in this part)

Primac Limited

50 High Street

Hungerford

Berkshire RG17 0NE

Patents ADP number (if you know it)

6225486002

If the applicant is a corporate body, give the country/state of its incorporation

United Kingdom

4. Title of the invention

Mounting of Tubes

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Marks & Clerk  
27 Imperial Square  
Cheltenham  
Gloucestershire GL50 1RQ

Patents ADP number (if you know it)

570001

18014

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

Yes

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

See note (d))

**Patents Form 1/77**

9. Enter the number of sheets for any of the following items you are filing with this form.  
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Continuation sheets of this form	0	4
Description	9	
Claim(s)	0	
Abstract	0	
Drawing(s)	2	2

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date

Marks & Clerk

13 August 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

Richard Bailey

01242 524520

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## **MOUNTING OF TUBES**

This invention relates to a technique for use in mounting tubes, and in particular tubes of a plastics material, to or upon other components.

5       Plastics tubes are sometimes used to support, for example, the retractable barriers of a queue management system, signposts or a number of other objects. When used in such applications, the plastics tubes are secured, at their lower ends, to appropriately shaped bases. Typically, each base includes an upstanding boss into or over which the associated plastics tube is 10 fitted, the plastics tube then being secured in position using, for example, screws. It has been found that the formation of openings or holes in the wall of the plastics tube into or through which the screws extend introduces stress concentrations which significantly weaken the tube and as a result there is a risk of the tube cracking or breaking, in use. Breakage of the tube in this 15 manner may result in the tube/base combination no longer being suitable for continued use. In some applications, an adhesive may be used instead of screws. However, depending upon the materials of the base and the tube, difficulties may be faced in obtaining an adhesive which is suitable for use with and compatible with both materials.

20       It is an object of the invention to provide a technique whereby a tube can be secured to another component, for example a base, in which this disadvantage is reduced or overcome.

According to one aspect of the invention there is provided a method of securing a tube to another component, the method comprising providing the said another component with an opening, passage or recess of generally tapering form, introducing the tube into the opening, passage or recess, 5 positioning a clamping member within the tube, and securing the clamping member to the said another component to clamp the tube between the clamping member and the said another component.

The clamping member is also preferably of generally tapering form, conveniently conforming with the opening, passage or recess.

10 The tube is conveniently of plastics form, and is may be of circular cross-section, although other cross-sections may be used, and the said another component is conveniently a base to allow the tube to be stood generally upright and used to support, for example, part of a queue management system, or a housing containing the said part of the queue management 15 system.

The tube may be shaped to include an end region of tapering form prior to the introduction of the tube into the opening, passage or recess. However, in one preferred technique, the tube is forced into the opening with a sufficiently high force to deform the end part of the tube to conform, 20 generally, with the tapering shape of the opening, passage or recess.

The clamping member may be provided with a screw threaded passage extending from the lower surface thereof, a screw threaded bolt being used to

secure the clamping member to the said another component, the screw threaded bolt extending through an opening formed in the said another component and into the screw threaded passage.

According to another aspect of the invention there is provided a post 5 arrangement comprising a tube, an end of which extends into an opening, passage or recess provided in a base, the opening, passage or recess being of generally tapering form, a clamping member being located within the tube, the clamping member being secured to the base to clamp the tube between the clamping member and the base.

10 The tube is preferably of plastics construction, and may be of circular cross-section, but other cross-sectional shapes may be used, if desired.

The clamping member is preferably of generally tapering form, and 15 preferably conforms generally with the shape of the interior of the part of the tube which is located within the opening, passage or recess provided in the base.

Conveniently, the clamping member is arranged to be secured to the base by means of a screw threaded coupling, for example in the form of a screw threaded bolt arranged to extend through an opening in the base and into a screw threaded passage formed in the clamping member.

20 The post is conveniently arranged to carry part of a queue management system. It will be appreciated, however, that the post may be employed in a

number of other applications, and so may be adapted or arranged to carry a wide range of other components or articles, for example signs.

According to another aspect of the invention there is provided a post arrangement comprising a tube, an end of which extends into an opening, 5 passage or recess provided in a housing forming part of a queue management system, the opening, passage or recess being of generally tapering form, a clamping member being located within the tube, the clamping member being secured to the housing to clamp the tube between the clamping member and the housing.

10 The tube is preferably of plastics construction, and may be of circular cross-section, although other shapes may be used if desired.

The clamping member is preferably of generally tapering form, and preferably conforms generally with the shape of the interior of the part of the tube which is located within the opening, passage or recess provided in the 15 housing.

Conveniently, the clamping member is arranged to be secured to the housing by means of a screw threaded coupling, for example in the form of a screw threaded bolt arranged to extend through an opening in the housing and into a screw threaded passage formed in the clamping member.

20 A post arrangement in accordance with the invention as defined above has the advantage that a generally widespread and uniform attachment means is provided. As no openings must be made in the tube in order to secure the

tube to the base or housing, less weakening of the tube occurs than in prior arrangements, thus the risk of the post breaking is reduced. The compatibility problems which may be faced where adhesive is used are also avoided.

The invention will further be described, by way of example, with 5 reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a post arrangement in accordance with an embodiment of the invention; and

Figure 2 is a diagrammatic sectional view of part of the post arrangement of Figure 1.

10 The post arrangement shown in Figure 1 comprises a plastics tube 10, the lower end of which is secured to a base 12. The upper end of the tube 10 carries a unit 14 forming part of a queue management system. The unit 14 comprises a housing 16 within which a spool is rotatably mounted, a length of webbing being wound onto the spool, and a spring being provided to apply 15 a biasing force to the spool so that, if webbing is pulled from the spool, then upon release of the webbing, the spring biasing causes the spool to rotate within the housing 16, winding the webbing back onto the spool and retracting the webbing into the housing 16. As shown, the housing 16 is provided with a slot through which the webbing extends.

20 The free end of the webbing carries part of a catch mechanism engageable with or connectable to one of three cooperatively shaped receivers formed in or on another similar post arrangement.

A similar unit 14 is also provided part way along the tube 10. Clearly, depending upon the application in which the post arrangement is to be used, this second unit 14 may be omitted, if desired, or additional units 14 may be provided, again if desired.

5       Turning to Figure 2, the base 12 comprises a portion 18 of generally cruciform shape. The portion 18 thus includes four legs 18a, 18b, 18c and 18d. One pair of opposing legs 18a, 18c are relatively long, the other legs 18b, 18d being shorter in length. A boss 20 upstands from the centre of the portion 18, the boss 20 being shaped such that the interior thereof defines a 10 recess 22 of generally tapering form. A passage 24 extends through the portion 18, the passage 24 opening into the recess 22.

The tube 10 is located such that its lower end is positioned within the recess 22. During assembly, the lower end of the tube 10 is forced into the recess 22, the engagement between the tube 10 and the boss 20 deforming the 15 lower end of the tube 10 such that it also adopts a generally tapering shape. The action of forcing the tube 10 into the recess 22 may result in the interior of the tube 10 adopting a shape which, although tapering, is not truly conical but rather is slightly barrelled, the inner surfaces of the wall of the tube taking on a slightly concave form.

20       Within the tube 10 is located a clamping member 26 which is of generally frustoconical form, the cone angle of which is approximately the same as that of the recess 22. Although the clamping member 26 may be of

truly frustoconical form, it may be preferable to shape the clamping member 26 to conform generally with the shape adopted by the interior of the part of the tube 10 which is located within the recess 22 and, as mentioned above, it is possible that this may be other than truly conical, for example the clamping 5 member may be of slightly barrelled, generally frustoconical form. A screw threaded bore 28 is provided in the clamping member 26, the bore 28 being aligned with the passage 24. A screw threaded bolt 30 extends through the passage 24 and into the bore 28, the head of the bolt 30 being located within a recess 32 formed in the underside of the base 12. The bolt 30 secures the 10 clamping member 26 to the base 12, clamping the deformed, lower end of the tube 10 between the clamping member 26 and the wall of the boss 20, thereby firmly securing the tube 10 to the base 12.

As the formation of openings in the wall of the tube 10 is avoided, the formation of stress concentrations in the tube 10 is also avoided, and the risk 15 of the tube breaking is thus reduced. The disadvantages associated with using adhesives are also avoided.

The method by which the post described above is assembled comprises forcing the tube 10 into the recess 22 to deform the end thereof, positioning the clamping member 26 within the tube 10 and then securing the 20 clamping member 26 in position using the bolt 30. It will be appreciated that the act of tightening the bolt 30 firmly secures the tube 10 to the base 12. Once the tube 10 has been secured to the base 12, the second unit 14 is

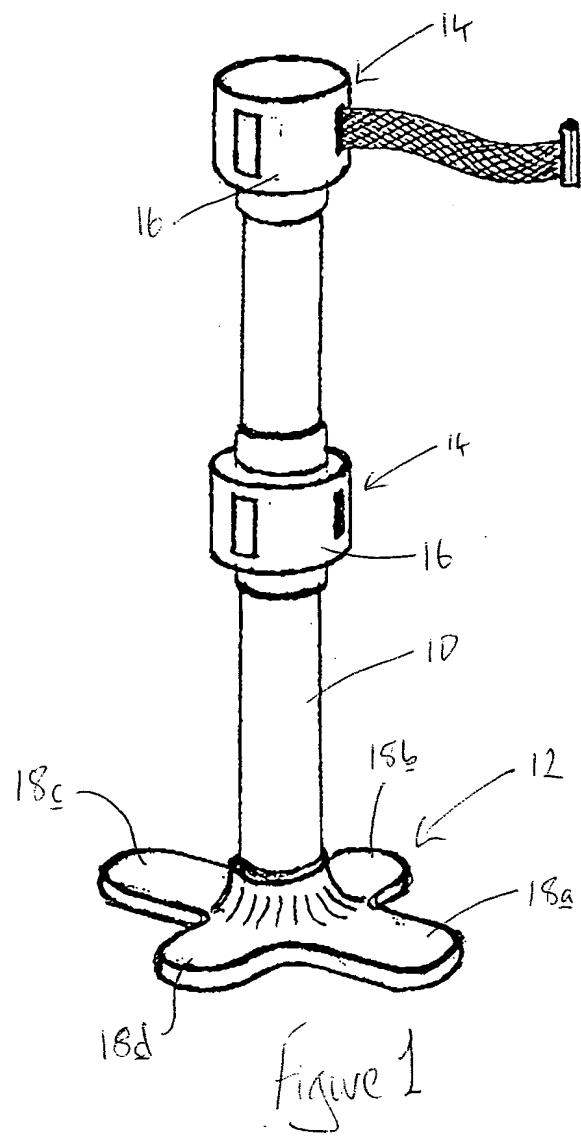
secured to the upper end of the tube 10, another length of tube is attached to the second unit 14, and the first mentioned unit 14 is secured in position.

The description hereinbefore is of the manner in which the tube is secured to the base. The same, or a similar, technique may also be used to 5 mount the units 14 upon the tube 10, the housing of each of the units being shaped to include a generally tapering recess, opening or passage into which the tube 10 is forced, a clamping member located within the tube being secured to the housing of the unit to clamp the tube between the housing of the unit and the clamping member. It will be appreciated, therefore, that in 10 the arrangement of Figure 1, the tube is in two parts, and four connections are made between the end parts of the tubes and the units/base. Obviously, where both ends of the tube are to be deformed, it is important to locate both of the clamping members within the tube before the deformation of the tube is completed.

15 In the arrangement described hereinbefore, the tube 10 is forced, using a large loading, into the recess 22. It will be appreciated that the magnitude of the load which must be applied may be reduced if, prior to introducing the tube into the recess, one or more slots were cut into the part of the tube to be forced into the recess. However, the formation of such slots may introduce 20 stress concentrations which may weaken the tube.

Although the invention has been described above in relation to a post for a part of a queue management system, it will be appreciated that the post

of the invention may be used in a wide range of other applications, for example for supporting signs or the like, and the method of the invention may also be used in mounting tubes to or upon components other than bases of the type described hereinbefore. Further, a number of changes may be made to 5 the design described above in accordance with the invention. For example, the shapes and relative sizes of the various components may be modified. In one possible arrangement, the tube is of cross-section other than circular.



212

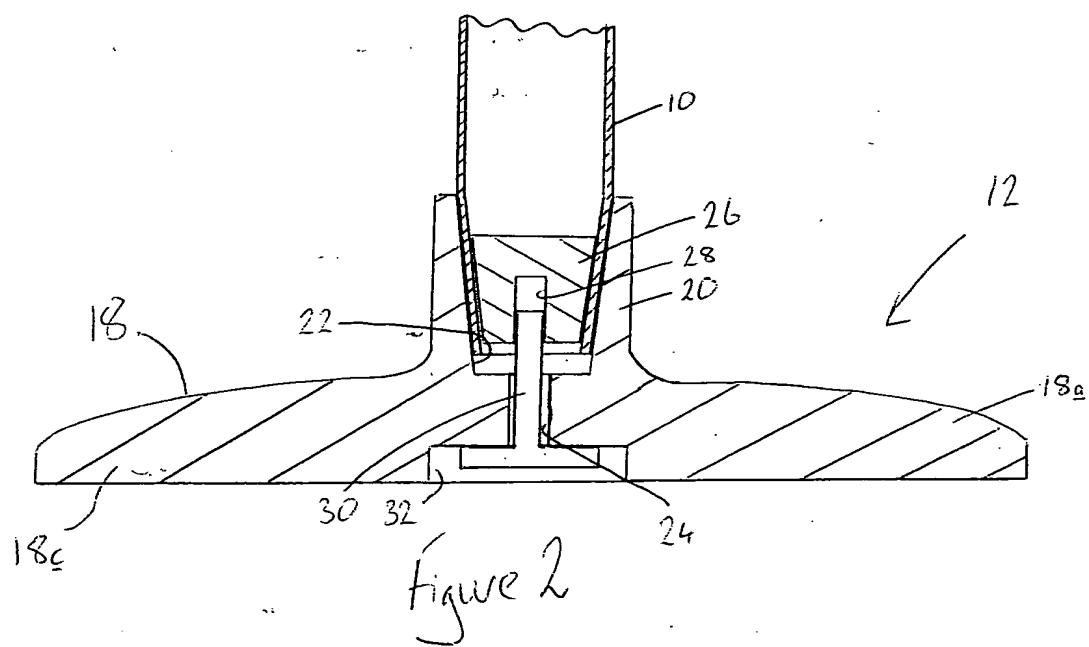


figure 2

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